

DYSLEXIC YOUTHS WITH 21st CENTURY OPPORTUNITIES

Éva Gyarmathy, gyarmathy.eva@gmail.com

Óbuda University, Ágoston Trefort Centre for Engineering Education

Renate Motschnig, renete.motschnig@univie.ac.at

Ján Struhár, jan.struhar@univie.ac.at

Dominic Hagelkruys, dominik.hagelkruys@gmail.com

Universität Wien

Introduction

A great part of students who, as a result of their poor literacy-related skills (reading, writing and counting), achieve badly in education, and have not successfully internalized these literacy-related skills, show up in vocational education and training, and especially in vocational schools. These include not only socio-culturally disadvantaged students, but also individuals struggling with learning difficulties, among them dyslexia, due to deficiencies in specific abilities.

Students who can barely read, write or count and who are not motivated towards studying any more due to the numerous failures they encountered pose a significant challenge to teachers. Digital culture puts literacy-related areas even more at a disadvantage. The question is whether such a disadvantage can, in fact, carry advantages, and what opportunities digital culture offers to compensate for the deficiencies.

Project Literacy¹

The European Union set off an international research in the topic of the literacy-related problems of youths and adults, perceiving the increase in these problems. The FP7 project Literacy has been initiated to create an online portal supporting the inclusion of dyslexic youths and adults. The overall approach of the project is built on three basic principles:

1. Dyslexia is a mode of information processing different from what is regular, which, beside its obvious disadvantages, can carry advantages, as well. One such advantage is creative thinking.

¹ AN ONLINE PORTAL FOR THE E-LEARNING AND SOCIAL INCLUSION OF DYSLEXICS.

<http://www.literacyproject.eu>

2. The most efficient way to cope with problems involves self-help groups. Social-interactive situations render the individual effective.
3. In the 21st century, technology makes it possible for an individual with a varied pattern of abilities to perform efficiently. Assistive technologies offer great opportunities to dyslexics, as well.

Based on this, the international research team working on the creation of the online portal has primarily targeted the presentation of assistive technologies and their efficient uses. Situations targeting creativity and self-help serve as a medium.

Questionnaire surveys have been initiated for the development of the portal content and to study the above principles. The results of these studies can be useful not only in the development of the portal, but also in the suitable provision for the increasing number of dyslexic individuals, in general. In the current study, we present results that can have practical application, as well, for professionals and individuals learning or teaching at the level of higher or secondary education, and especially vocational education.

1. Crutches or wings

Increasingly greater amount of data supports the notion that dyslexia is rooted in a type of brain functioning that is different from regular, which, coupled with appropriate other characteristics, can also lead to outstanding achievements.

Spatial-visual abilities are interlinked with mathematical, fine art and musical abilities. Children excelling at mathematics are characterised by a greater activity in their right brain hemisphere than is regular (*O'Boyle et al*, 1991). This different from regular dominance is also signalled by the fact that the ratio of the right-handed is smaller among mathematicians, artists and musicians (*Annett*, 1985; *Geschwind, Galaburda*, 1987).

These differences may also lead to disorders. A number of studies show that developmental language disorders, among them, dyslexia, are more prevalent among artists (*Winner et al* 1991; *Winner, Casey*, 1993;). Studies of musicians and even inventors produced similar results (*Hassler*, 1990; *Colangelo et al*, 1993;).

Bloom et al (1985) revealed in their study that not one of twenty leading mathematicians of the world had learned to read before school, and six of them even had difficulty learning to read. Test studies have

established that dyslexics are overrepresented at outstanding intelligence levels (*Reis et al*, 1995; *Gyarmathy*, 1998).

Based on his studies, Lloyd J. Thompson identified learning disorders in earlier age in Lee Harvey Oswald, the assumed murderer of President Kennedy, on the basis of biographical data. When writing his study, his colleagues drew his attention to the danger of potentially presenting an angle on individuals with different language abilities as being more prone to criminal deeds than regular.

This drove Thompson to publish his collection of great creators with learning difficulties (*Thompson*, 1971). Thompson's compilation features famous artists, politicians and researchers alike, such as Auguste Rodin, General George Patton, American President Woodrow Wilson, bacteriologist Paul Ehrlich, brain surgeon Harvey Cushing.

Since then, lengthier and lengthier lists of "Famous Dyslexics" are available even on the Internet. One such list can be found on the website of the British Dyslexia Association, for example:

<http://www.bdadyslexia.org.uk/about-dyslexia/famous-dyslexics.html>.

The Hungarian Dyslexia Pages presents famous bad students and Nobel prize winners diagnosed with learning difficulties:

http://www.diszlexia.hu/Hires_diszlexiasok_quotes.htm,

<http://www.diszlexia.hu/DiagnosedNobelPriceWinners.pdf>

Dyslexic brains perform poorly at school, but may be outstanding at free-time activities. Learning often poses problems for them at elementary school, while they may perform well in higher education. *Tannenbaum and Baldwin* (1983) called talents with learning difficulties "paradoxical learners".

For the moment, the environment strives to channel individuals who process information in a different way than regular into regular frameworks of thinking instead of building on their strengths and thereby generating profit for both the individual and society. The development provided to these individuals is unbalanced, targeting solely their weaknesses. The question arises: if you can hardly walk, would you be better off getting crutches to hobble along with, or wings to fly with?

Wings for dyslexics is the stronger right brain hemisphere functioning. Building on this, they are able to cope much more efficiently than treading ways which, though regular and received, are for them impassable.

2. Specific learning difficulty

Quite a few causal factors have been identified for dyslexia, which makes it clear that such a specific learning difficulty is an umbrella term. It is basically an achievement disorder caused by late or abnormal development in the area of speech, reading, writing and/or counting. The terms dyslexia, dyscalculia, dysgraphia and mixed learning disorder are symptomatic designations based on the area of abilities most strongly affected by the neurological difference (*Gyarmathy, 2007*).

Most characteristics identified for dyslexia can be traced back to the differences inherent in information processing. Right hemisphere dominance shows up unequivocally as a causal factor, even though there are a number of individuals with right hemisphere dominance who have no learning difficulties.

The reason for this is that right hemisphere dominance is only indirectly responsible for the problem. Dyslexics are those individuals with a right hemisphere dominance in whose case the cooperation between the two brain hemispheres is inadequate, that is, they are unable to use information from the left hemisphere properly.

Hynd and his colleague shown as early as in 1989 that the front part of the corpus callosum connecting the two hemispheres is less developed in the case of dyslexics in comparison to non-dyslexics. Since then, multiple studies have demonstrated the significant role of an effective connection between the hemispheres in reading performance (*Castro-Caldas et al, 1999; Dougherty et al, 2007; Petersson et al, 2007*).

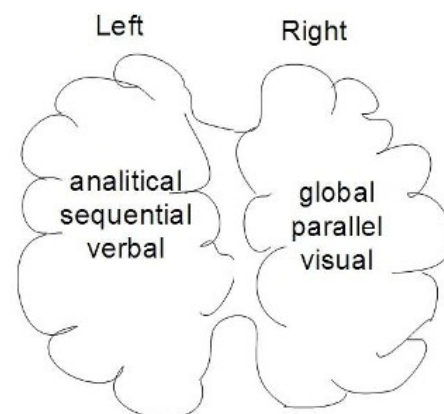


Figure 1
Cooperation between the hemispheres is realized through the corpus callosum.

There are probably people struggling with similar transmission problems, but since their dominant left hemisphere processing is in line with the general requirements, unilateral processing causes less difficulties for them, at least on the outside.

Specific learning difficulty is a neurologically-based syndrome that is independent of intelligence. It affects the mode, rather than the level of thinking. Its manifestation is culture-dependent, that is, environmental effects can influence in many ways its manifestation and the extent to which the different way of information processing will cause difficulties.

Thus, right hemisphere dominance and other characteristics identified as the source of learning difficulties will only lead to difficulties if the environment fails to take into account the different from regular structure of abilities which characterises these individuals (*Gyarmathy, 2007*). The characteristics specific to dyslexics has benefits and drawbacks alike, like any other characteristic. Being in minority, however, makes integration and coping with everyday situations more difficult for them.

The visual-kinetic world of the digital culture, having unfolded to a large degree by the 21st century, has increased the ratio of dyslexics owing to the decreased amount of stimuli promoting verbal development that is received by developing brains. At the same time, this very same culture offers opportunities for efficient coping, as well (*Gyarmathy, 2012*). With a change in the approach to treating learning difficulties and the increasing variety of assistive technology at hand make it possible to employ the principle of "a hair of the dog that bit him" and create an environment suitable for dyslexic individuals, as well.

Dyslexic individuals have no need for exemptions or waivers, but instead for an environment appropriate for their abilities in order to secure integration and social success.

3. The Creative Corner and the Community Zone

These are two services of the online portal for dyslexics which may hold a strong attraction for them, and the content of which is already starting to take shape. We studied the necessity and the attraction of "Creative Corner" and the "Community Zone" among dyslexic adolescents and adults.

The Creative Corner offers an opportunity for the users of the website to share their creations. The portal even provides ideas by introducing technical tools and programmes which can help individuals in forming creations of their own.

The Community Zone is a forum which offers an opportunity for cooperation and discussion. It thereby secures an online self-help background.

Professionals working on the portal designed these services as useful opportunities on the basis of decisions based on research results. In the following phase, we interviewed dyslexics themselves how they relate to these services and opportunities.

The results not only provide useful information for the design of the portal, but may also be of significance in the "offline" life of dyslexics.

4. Results of the questionnaire studies

We have carried out two questionnaire studies. The pilot study involved a questionnaire with ten dyslexic adults, while the interview questionnaire itself reflects the views of 37 dyslexic individuals. The latter were clients of the Hungarian Centre for Adolescent and Adult Dyslexics, while the pilot study involved a group of dyslexics interested in the topic and randomly selected from the internet.

4.1. The pilot study and its results

In the pilot study, we were interested in what services dyslexic youths and adults would prefer to choose. We listed alternatives that are relevant on the basis of previous experience and according to the intended profile of the portal.

We recorded the answers of ten subjects. All of them are dyslexic youths or adults. Their age is between 19 and 54 years, with an average of 33.2 years. The distribution is relatively even within this range. The sample is, however, unbalanced with respect to gender, with significantly more women participating in the study (the ratio being 2:8). This did not, however, generate a deviation, as the answers of the two males fit in well with the rest of the data.

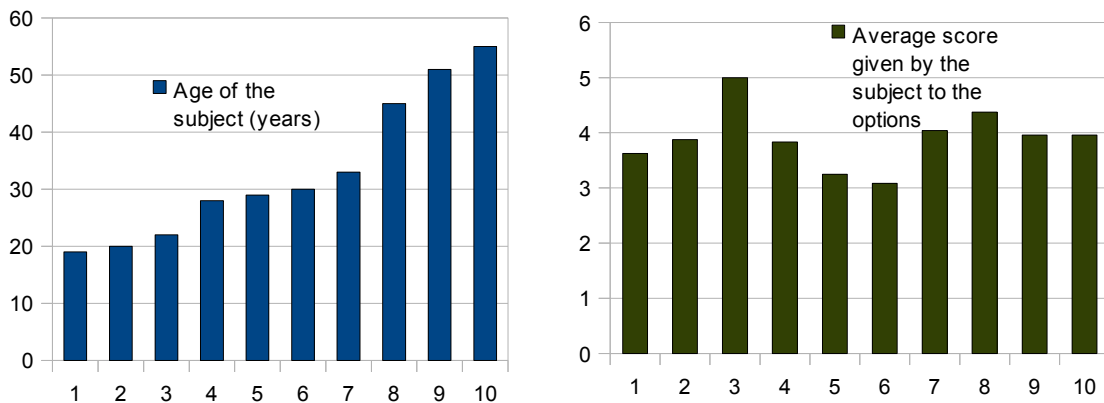


Figure 2-3

The age of the subjects (2) and the average scores for the choice options by subject (3)

The sample for the pilot study is extremely small, and is therefore not amenable to statistical analysis. The object of the pilot study was preliminary orientation, for which this group provided sufficient information.

The average score for the choice options on a scale of 1 to 5 was 3.9, which means that dyslexic youths and adults definitely welcome opportunities which can provide multiple ways of support. The average score for the choice options is apparently independent of age and there is little deviation. One lady gave maximal points to all questions. No average scores are below 3.

We examined which services the dyslexics participating in the study chose most decisively. We considered services as outstandingly sought-for that received scores above the average for choice options. Out of the total 24 areas, 14 received higher scores to this effect, which means that we successfully listed a great number of useful options of possibly wide-spread interest. We can regard as "winning" services those which dyslexics feel they have the most need for (Table 1).

Thus, we considered services as especially sought-for whose scores surpassed the average scores per question.

Each subject would very definitely like help in learning foreign language, this question having received maximal scores. This result fits in with the fact that most of those seeking help at the above-mentioned Hungarian Centre for Dyslexics seek help with this particular issue. Most clients seek

waivers for language examinations or dyslexics-friendly language teaching.

Another result in line with our experience is that dyslexics are looking for efficient reading methods. Although most individuals are able to read, they do so more slowly and with more difficulty than average. As a result, understanding and processing a text requires great effort and is even unsuccessful, at that.

Choices about knowledge concerning dyslexia received high scores. This could mean that dyslexics seek greater awareness, and, therewith, independent ways of coping.

Next on the list of sought-for choices come services that aid reaching a harmony necessary for integration. Such areas include fatigue management, learning methods, organisation, personal efficiency and mental harmony.

In addition, services targeting the development of skills and abilities, such as counting, time management, attention and organisation of studying, are also relatively well sought for (Table 1).

Exceptionally sought-for services											
Number of the subject	1	2	3	4	5	6	7	8	9	10	Average
Gender of subject (1=male, 2=female)	2	2	2	1	1	2	2	2	2	2	1,80
Age of the subject (years)	19	20	22	28	29	30	33	45	51	55	33,20
Average score given by the subject to the options	3,6	3,9	5,0	3,8	3,3	3,1	4	4,4	4	4	3,90
Would you like to learn methods for foreign language learning?	5	5	5	5	5	5	5	5	5	5	5,00
Would you like to learn effective reading methods?	5	5	5	5	4	5	5	5	5	5	4,90
Are you interested in the characteristics of dyslexics?	5	5	5	5	4	5	5	5	5	5	4,90
Are you interested in the sources of dyslexia?	5	5	5	5	4	5	5	5	4	5	4,80
Are you interested in the theoretics background of dyslexia?	5	5	5	5	4	5	5	5	4	4	4,70
Would information about fatigue managemend help you?	4	4	5	5	5	4	5	5	4	5	4,60
Would you like to learn methods for independent learning?	3	5	5	5	5	4	3	5	5	5	4,50
Would information about organisation help you?	5	4	5	4	4	3	5	4	4	5	4,30
Would you like information about attaining personal efficiency?	4	4	5	2	3	5	4	5	5	5	4,20
Would you like to get help to find mental harmony?	4	5	5	3	2	3	5	5	5	5	4,20
Would you like to learn methods of counting?	1	3	5	5	4	5	3	5	5	5	4,10
Would information about time management help you?	4	3	5	4	4	2	5	5	4	5	4,10
Would you like to participate in an online attention development training?	4	4	5	5	3	3	4	3	5	5	4,10
Would you like to engage in learning management practices?	4	3	5	5	4	2	3	5	4	5	4,00

Table 1
Services most preferred by the respondents

The least sought for services received scores below 3. These would primarily target helping with the use of the Internet and e-mails. The dyslexic respondents to the questionnaire do not feel they need any help in this respect. Similarly, they do not regard finding a job as a problem (Table 2).

Services with above average, but not outstanding scores												
Number of the subject	1	2	3	4	5	6	7	8	9	10	Average	
Gender of subject (1=male, 2=female)	2	2	2	1	1	2	2	2	2	2	1,80	
Age of the subject (years)	19	20	22	28	29	30	33	45	51	55	33,20	
Average score given by the subject to the options	3,6	3,9	5,0	3,8	3,3	3,1	4	4,4	4	4	3,90	
Would you like to get help on efficient meeting participation?	3	4	5	4	2	4	4	4	3	5	3,80	
Would information about managing finances help you?	3	2	5	4	3	2	3	4	4	4	3,40	
Would you like to get help in writing a CV?	3	4	5	4	3	1	5	4	2	2	3,30	
Would you like to get help in writing a business letter?	3	4	5	3	3	1	5	4	2	3	3,30	
Would you like to participate in an online reading training?	3	4	5	5	3	1	1	3	5	3	3,30	
Would you like to get information about self-help groups?	3	4	5	1	1	2	5	5	3	3	3,20	
Would you like to participate in an online counting training?	1	2	5	5	3	4	1	3	5	3	3,20	
Not particularly important services												
Number of the subject	1	2	3	4	5	6	7	8	9	10	Average	
Would you like to get information on finding a job?	4	4	5	1	3	1	3	5	2	1	2,90	
Would you like to get help in reading and writing emails?	3	2	5	1	1	1	5	3	2	1	2,40	
Would you like to get help in browsing web pages?	3	3	5	1	1	1	3	3	3	1	2,40	

Table 2
Services less or barely preferred by the respondents

Subjects indicated an intermediate level interest in online training opportunities. Dyslexic adults feel that it is not so much a training, as knowledge of the appropriate environmental factors and methods is what helps in coping with problems in everyday life. Trainings may help develop abilities, but require far more time and energy than well-fitting organisational, learning method and life style solutions. The choices mirror this broadly, with online trainings receiving medium scores.

The responses indicate that the group also only needs medium level help in official matters, such as finance, meetings or business letters. Although dyslexic functioning may cause a lot of difficulty in official matters, administrative areas still do not feature among the most sought-after services.

In a similar vein, the issue of a self-help group failed to receive particular focus. This might be taken as a warning sign for the portal. In the international practice, civil initiative-based self-help has considerable weight. For the group of Hungarian dyslexics featured in this study, however, this solution does not appear to be an important option.

Given that the group under study is extremely small, no far-reaching conclusions can be drawn. The tendencies are, nevertheless, noteworthy, and should be taken into consideration in planning the appropriate provision for dyslexics.

4.2. The interviews and their results

In a deeper and larger volume study, we aimed to analyse specifically the two services planned and mentioned above from the viewpoint of the users. According to our plans, creativity and community-related and social relations will play a significant role in the online services for dyslexics. We interviewed 37 teenage and adult dyslexics in this respect. They were all clients of the Hungarian Centre for Adolescent and Adult Dyslexics². Some of them only came for an assessment, some of them participated in counselling and a number of them in some training, as well. Some of the clients received psychotherapy, as well.

Based on their age, the participants, ranging between 13 and 54 years of age, clearly divided into three groups, namely, adolescents (under 20), young adults (between 20 and 30 years) and adults (30 years or older). Half of the sample falls into the group of adolescents, that is, now participate in secondary education and may enter higher education in the coming years.

In the interview, we presented them with 18 main questions, with supplementary open questions accompanying some. Of these, eight questions concerned creative activities, and ten concerned community activities. Part of the analysis we carried out was metrical, using the scoring 0=no, 1=not sure, 2=yes. In the case of questions 3 and 4, the number of softwares listed constituted the score.

² The Centre for Adolescent and Adult Dyslexics of the Sun-Circle Mental Hygiene Foundation also offers provision for university students in cooperation with the Ágoston Trefort Centre for Engineering Education of the Óbuda University.

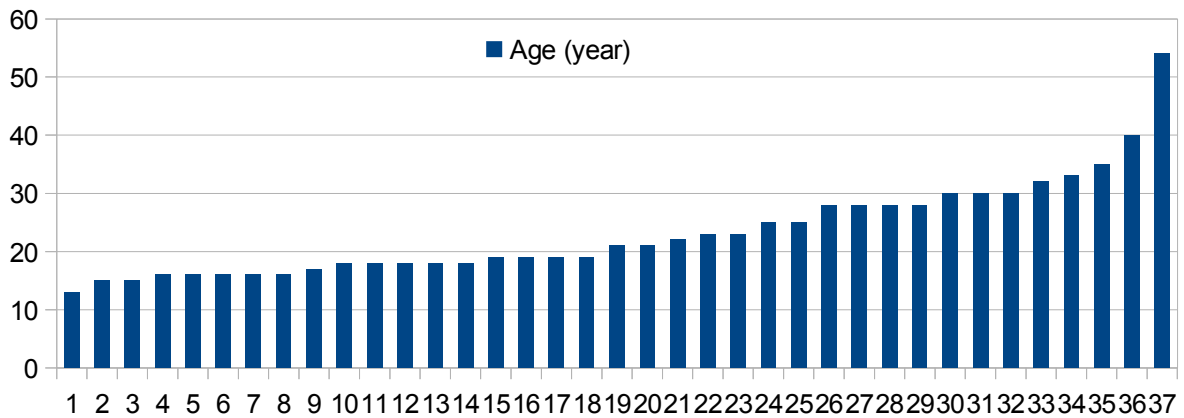


Figure 4

The three age groups participating in the interview, adolescents (N=18), young adults (N=11) and adults (N=8)

Group	adolescent	young adult	adult	average
Average age (years)	17.00	25.54	35.50	23.30
Ratio of genders (male=1, female=2)	1.33	1.69	1.75	1.51
Do you engage in creative activities?	1.61	1.54	1.38	1.62
Could a computer assist you in creativity?	1.33	1.38	1.25	1.38
Which softwares do you use?	2.06	2.08	2.13	2.03
Which softwares would you want to learn to use?	0.83	1.31	2.00	1.16
Would you create an education programme for other dyslexics?	0.89	1.00	1.25	1.05
Would you create a short text or video about yourself?	0.56	1.54	1.13	1.00
Would a letter colouring tool help?	1.06	0.92	0.50	0.89
Would you share any of your creations?	1.39	0.85	1.38	1.24
Creative activities average score	1.22	1.33	1.38	1.30
Complete questionnaire average	1.16	1.31	1.18	1.21

Table 3

Responses to questions about creative activities

In the present study, we mainly focus on metrical results, but we take other data into account, as well. It is evident from the responses that the dyslexic group in question engage in high level creative activities. Only three of the subjects stated not engaging in any form of creative activity. Nine subjects show average creativity, while the rest of the subjects give birth to true creations.

What explains the lower score for the adult group is that this group includes two 30-year-old ladies who both gave zero points to this questions. One of them presents an excellent example of the problem of self-esteem characterising dyslexics.

Case description: *Kati (30 years old) does not regard herself as creative and does not believe that the computer can help her in her creative activities. However, she listed more software than average that she uses in creative activities. She even names further two specific programmes the use of which she would like to acquire. She does not wish to present herself or appear to the public in any way. She gives zero scores to all opportunities, even though it is evident from the questions concerning the use of software that she does do creative work.*

1	Do you engage in creative activities?	0
2	Could a computer assist you in creativity?	0
3	Which softwares do you use?	4
4	Which softwares would you want to learn to use?	2
5	Would you create an education programme for other dyslexics?	0
6	Would you create a short text or video about yourself?	0
7	Would a letter colouring tool help?	0
8	Would you share any of your creations?	0
	Creative activities average score	0.75

Table 4

Kati, a thirty-year-old lady. Her answers to questions about creative activities mirror the image of a dyslexic with self-esteem problems, who is unaware of and fails to acknowledge her own strengths, and who refrains from appearing to the outside world.

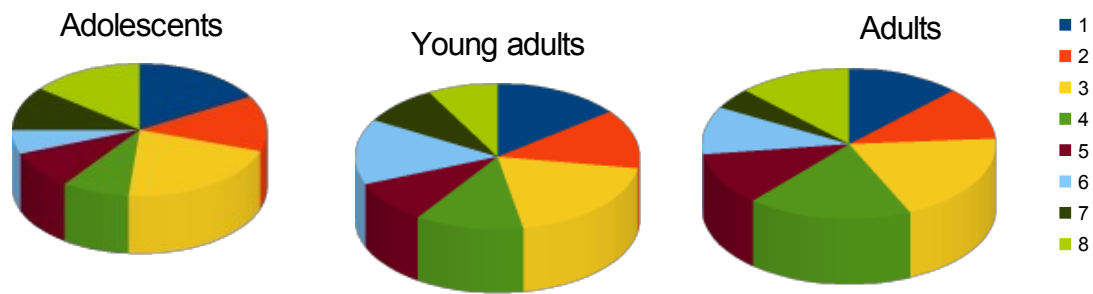


Figure 5

The responses of the three age groups to questions about creative activities

Analysis of the scores indicates that all age groups like to use ICT tools for their creative activities (question 2). The youngest, however, tend to use more tools, but as a result, tend not to want to learn the use of new ones as much (questions 3 and 4).

In terms of making education programmes or videos about themselves, adolescents are less active (questions 5 and 6), but appear to be more active in sharing their creations (question 8). The coloured letters method for reading would not help many respondents. This question (number 7) received the lowest scores among questions about creative activities. These phenomena are easy to visualise (Figure 5)

The second group of questions concerned online community activities. All subjects answered in the affirmative to the question about actively using online communication (question 9). As regards the use of Facebook, answers show a small variation. Four subjects answered no, three of whom belong to the adult group (question 11).

	Group	adolescent	young adult	adult	average
	Average age (years)	17.00	25.54	35.50	23.30
	Ratio of genders (male=1, female=2)	1.33	1.69	1.75	1.51
9	Do you communicate online?	2.00	2.00	2.00	2.00
10	Would you prefer a closed or an open social network?	1.22	1.54	0.71	1.19
11	Do you use Facebook?	1.89	2.00	1.25	1.78
12	Do you have any problem in using Facebook?	0.39	0.62	0.13	0.43
13	Would you join a Facebook group for dyslexics?	0.89	1.69	1.00	1.17
14	Is there a communication tool whose use you have problems with?	0.11	0.00	0.43	0.14
15	Do you comment often?	0.50	0.77	0.86	0.64
16	Do you use forums?	1.44	1.15	1.29	1.28
17	Are you a frequent participant of an online community?	1.44	1.92	1.14	1.56
	Online community average scores	1.10	1.30	1.00	1.14
	Complete questionnaire average	1.16	1.31	1.18	1.21

Table 5
Responses to questions about online activity

The responses do not make it clear if it is a good idea to build on an online community of dyslexics. It is mostly the young adults who would join a Facebook group of dyslexics. Adolescents and adults would be less willing to do so (questions 13). It is equally not evident whether a closed or an open group would suit the dyslexics best (question 10). Most respondents expounded on both advantages and disadvantages, few very able to give a definite answer.

To questions about problems of dyslexics in online communication, participants basically answered in the negative. In other words, they are at home in online activities and do not need any particular help in this respect (questions 12 and 14).

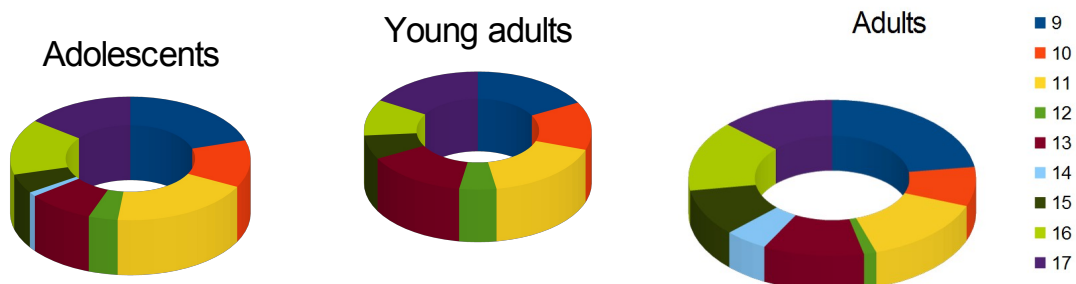


Figure 6
The responses of the three age groups to questions about online activities

The low score for commenting indicates that dyslexics may avoid writing even in online situations (question 15). Activity of the respondents is greater in forums and online communities (questions 16 and 17). This may raise the hope that they will also participate in the activities of the community zone on the online portal intended for dyslexics.

It is worth comparing the case of two adolescents at this point. László is the sole respondent in the group of adolescents who does not use Facebook. (In the group of adults, three more individuals gave a similar response.) He does communicate online and has no problem with it. Tamás is the sole adolescent who does not believe he engages in any creative activity. (In the group of adults, two more individuals gave a similar response.)

Case description: *László's creativity is not linked to the computer, instead, he does carpentry. He likes tasks which appear unsolvable. He needs no software to this end. He would gladly participate in making educational programmes, as well as in presenting his own life experience. He does not believe he has any creations to share, because he tends to solve problems, instead. He avoids Facebook and similar networks, but at the same time believes that an open community zone would be better. He sometimes visits forums. His responses reveal a young man with independent thinking and appropriate self-esteem.*

Case description: *Although Tamás knows different softwares, who wouldn't use them for creative work. If there were one that can develop his abilities, that one he would use. He uses infocommunication tools, and has no difficulty using them, but he wouldn't want to make an education programme, nor would he present himself and his life in any way. He considers an open community zone as the better option, so that others can also get to know the difficulties that dyslexics face. The responses reveal a young man with little self-confidence, struggling with his difficulties, who, lacking self-confidence, does not dare to create and take credit for the creation, and seeks opportunities to develop his reading abilities, in the traditional way.*

		László	Tamás	All subjects
1	Do you engage in creative activities?	2	0	1.594595
2	Could a computer assist you in creativity?	0	1	1.378378
3	Which softwares do you use?	0	0	1.972973
4	Which softwares would you want to learn to use?	0	0	1.162162
5	Would you create an education programme for other dyslexics?	2	0	1.054054
6	Would you create a short text or video about yourself?	2	0	1.00
7	Would a letter colouring tool help?	0	2	0.891892
8	Would you share any of your creations?	0	0	1.243243
	Creative activities average score	0.75	0.38	1.29
9	Do you communicate online?	2	2	1.945946
10	Would you prefer a closed or an open social network?	2	2	1.194444
11	Do you use Facebook?	0	2	0.891892
12	Do you have any problem in using Facebook?	0	0	0.432432
13	Would you join a Facebook group for dyslexics?	0	0	1.166667
14	Is there a communication tool whose use you have problems with?	0	0	0.166667
15	Do you comment often?	0	0	0.638889
16	Do you use forums?	1	2	1.277778
17	Are you a frequent participant of an online community?	0	0	1.555556
	Online community average scores	0.57	1.07	1.03
	Complete questionnaire average	0.65	0.74	1.16

Table 6

The scores of László and Tamás. The two adolescent boys differ both from their peers, and gave low scores in the questionnaire, but in a pattern also different from each other's.

4.3. Comparison of the results

The data and the short case descriptions both show there were as many responses as many participant dyslexics. Dyslexia may itself be

multifarious, and a dyslexic person is unique, just like everyone else. Still, it is possible to identify a few landmarks and milestones that may be used in the provision of dyslexics.

Both questionnaires unequivocally showed that the use of infocommunication tools presents no problem for dyslexics, and are not interested in advice or help in this topic. This is of vital significance from the point of an online portal, as it means it can build on a well-functioning user background, and there is no need to impart basic infocommunication knowledge. At the same time, the need for an online community is ambiguous. Respondents did not deem either self-help or an online community as an important component. Although the majority is present on Facebook, they are not as active in online communities.

As regards the content of the portal, we obtained a number of definite pieces of feedback. One area is skills development, language learning and reading made easier. Language learning has probably grown into a critical issue due to appearance of the language exam as a significant factor in more and more places. In addition, foreign language knowledge broadens an individual's options in today's world. The school type language learning, however, does more harm than good for dyslexics' language learning at the moment.

It also turned out that it is important for dyslexics to understand the source of their difficulties and the way they could change this. They would like to know as much as possible about their difficulties and how they could cope with it. The very same attitude can be discerned in the case of the interview subjects, almost all of whom reports engaging in independent creative activities, many of whom would gladly help others, as well, and would be willing to present themselves and their creations.

On the basis of the above, the Creative Corner, as an interactive opportunity to activate the creativity in dyslexics. appears appropriate as a service of a website designed for them. In addition, it would be worthwhile building on this strength of dyslexics in education, as well.

Although the small size of the sample precludes far-reaching conclusions, a comparison of the responses of the different age groups shows that there are no significant differences between them as regards the above basic tendencies. Thus, as also suggested by ability and personality development, the dyslexia treatment of adolescents, young adults and adults may proceed in a similar fashion. There is no need for a difference in method or instrument.

5. Summary and conclusions

In our study, we designed questionnaires and interviews in order to find out about the needs of dyslexic adolescents, young adults and adults that help their integration. The basis for the relevance of the studies directed at issues important in vocational education is the constantly increasing number of dyslexics, on the one hand, and the opportunities offered by an international project, on the other hand.

Even to this day, the view that dyslexia is a childhood difficulty is holding up (it is even termed as an illness). Dyslexia, however, is no illness, and it only becomes a difficulty if the environment supporting these individuals is not suitable for their characteristics.

Dyslexia is a neurological characteristic, whose benefits and drawbacks endure for the whole life of the individual. The knowledge of these and an appropriate environment is the key to forestall learning and integration difficulties. This, in turn, is the most efficient if it fits in with the relevant socio-cultural environment. This way, there is a greater chance of targeting the support we provide well.

Project Literacy is based on the above approach. It builds on creativity, the strength of dyslexics, and uses a significant component of today's culture, namely, infocommunication as its medium. Our study corroborated that creativity is very much present in the self-reflection of dyslexics, and they would welcome such an opportunity to use it. It also became clear that the use of infocommunication tools presents no problems, but the attitude of dyslexics toward an online community self-help is ambiguous. This particular service should therefore be heavily rethought.

The study, once again, established that dyslexics do not need a protective, condescending and weakening environment with waivers and exemptions. The short case descriptions demonstrated some of the problems and coping / non-coping strategies which may appear even within the bounds of a short questionnaire.

Although it is least characteristic of students, who most typically appear in vocational education and vocational schools, who have met with so many failures that they no more wish to cope with them, many would like to solve their problems themselves. To this end, however, they would need an environment suitable for their characteristics, which would also value their strengths. This approach should penetrate both education and employment, alike, that is, it should become part of everyday life that different from regular abilities be identified as a potential rather than a disorder.

The social benefit from the integration of dyslexics and the realization thereof no more belongs to the future. A company in Birmingham is expressly looking for dyslexic employees, because it sees added value in the creative thinking they bring into their work.

<http://icbirmingham.icnetwork.co.uk/0100news/0100localnews/page.cf?method=full&objectid=14279707>

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